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**MONTEREY, CALIFORNIA**

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## **MBA PROFESSIONAL REPORT**

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**Feasibility Study of the Department of the Air Force Information  
Technology Commodities Council (ITCC) Digital Printing and Imagery  
(DPI) Initiative**

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**By: Christopher S. DeSalle  
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December 2006**

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<b>REPORT DOCUMENTATION PAGE</b>			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.				
<b>1. AGENCY USE ONLY (Leave blank)</b>		<b>2. REPORT DATE</b> December 2006	<b>3. REPORT TYPE AND DATES COVERED</b> MBA Professional Report	
<b>4. TITLE AND SUBTITLE:</b> Feasibility Study of the Department of the Air Force Information Technology Commodities Council (ITCC) Digital Printing and Imagery (DPI) Initiative			<b>5. FUNDING NUMBERS</b>	
<b>6. AUTHOR(S)</b> Christopher S. DeSalle, David A. Schilling				
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> Naval Postgraduate School Monterey, CA 93943-5000			<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>	
<b>9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> Mr Kenneth Heitkamp, SAF/XCI, Director, Information Technology Commodities Council			<b>10. SPONSORING / MONITORING AGENCY REPORT NUMBER</b>	
<b>11. SUPPLEMENTARY NOTES</b> The views expressed in this report are those of the author(s) and do not reflect the official policy or position of the Department of Defense or the U.S. Government.				
<b>12a. DISTRIBUTION / AVAILABILITY STATEMENT</b> Approved for public release, distribution is unlimited			<b>12b. DISTRIBUTION CODE</b> A	
<b>13. ABSTRACT (maximum 200 words)</b> <p>The purpose of this project is to further provide conceptual direction for implementing the Air Force Digital Printing and Imagery (DPI) initiative through the Information Technology Commodities Council (ITCC). The project will begin with the background and reasoning why Air Force organizations should implement DPI. Our objectives will be to develop a consistent plan and model for bases and organizations to do quick assessments of their DPI requirements based on a set standard of guidelines. Accompanied with this plan will be proposed policy guidance for implementing DPI in accordance with the Air Force Electronic Records Management policy. This project will also make recommendations for marketing the plan throughout the Air Force to promote a smooth transition and implementation. The product will consist of the overall recommended guidance for the ITCC to implement this initiative, to include a model for quick assessments, requirements determination and post implementation guidance. Finally the project will discuss the future of this initiative along with recommendations for further research and development.</p>				
<b>14. SUBJECT TERMS</b> Information Technology, Printers, Print Services, Copiers, Electronic Records Management, Paperwork Reduction, Multi-Function Devices, Scanners, Fax Machines			<b>15. NUMBER OF PAGES</b> 59	
			<b>16. PRICE CODE</b>	
<b>17. SECURITY CLASSIFICATION OF REPORT</b> Unclassified	<b>18. SECURITY CLASSIFICATION OF THIS PAGE</b> Unclassified	<b>19. SECURITY CLASSIFICATION OF ABSTRACT</b> Unclassified	<b>20. LIMITATION OF ABSTRACT</b> UL	

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)  
Prescribed by ANSI Std. Z39-18

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**FEASIBILITY STUDY OF THE DEPARTMENT OF THE AIR FORCE  
INFORMATION TECHNOLOGY COMMODITIES COUNCIL (ITCC) DIGITAL  
PRINTING AND IMAGERY (DPI) INITIATIVE**

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Submitted in partial fulfillment of the requirements for the degree of

**MASTER OF BUSINESS ADMINISTRATION**

from the

**NAVAL POSTGRADUATE SCHOOL  
December 2006**

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# **FEASIBILITY STUDY OF THE DEPARTMENT OF THE AIR FORCE INFORMATION TECHNOLOGY COMMODITIES COUNCIL (ITCC) DIGITAL PRINTING AND IMAGERY (DPI) INITIATIVE**

## **ABSTRACT**

The purpose of this project is to further provide conceptual direction for implementing the Air Force Digital Printing and Imagery (DPI) initiative through the Information Technology Commodities Council (ITCC). The project will begin with the background and reasoning why Air Force organizations should implement DPI. Our objectives will be to develop a consistent plan and model for bases and organizations to do quick assessments of their DPI requirements based on a set standard of guidelines. Accompanied with this plan will be proposed policy guidance for implementing DPI in accordance with the Air Force Electronic Records Management policy. This project will also make recommendations for marketing the plan throughout the Air Force to promote a smooth transition and implementation. The product will consist of the overall recommended guidance for the ITCC to implement this initiative, to include a model for quick assessments, requirements determination and post implementation guidance. Finally the project will discuss the future of this initiative along with recommendations for further research and development.

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## **ACKNOWLEDGMENTS**

Sincere gratitude goes to our advisors, Glenn Cook, and Dr. Douglas Brinkley, who provided excellent guidance and support during this project. Your insight and direction were truly appreciated. We would also like to recognize Mr. Kenneth Heitkamp, the Director of the Air Force Information Technology Commodities Council (ITCC), and Ms Debra Middleton, the ITCC Chairperson for their tremendous contributions. Additionally, we would like to thank Mr. Brent French, Senior Account Manager for Lexmark International, Inc whose encouragement and research assistance was invaluable. All these individuals were instrumental in helping us complete our research and provided continued support and assistance through the duration of the project.

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# **I. INTRODUCTION**

## **A. BACKGROUND**

United States Air Force (USAF) organizations consume vast amounts of resources in order to perform their daily duties. Two of the most widely used resources consumed by all organizations are paper and toner. In fact, in 2004 the USAF spent over \$18M on paper and over \$93M on consumables of which the largest contributor was toner.<sup>1</sup> At a total of \$113M for paper and consumables the USAF could purchase almost one more F-22 which goes for a price of \$130M per airframe.<sup>2</sup> The Department of Defense (DoD) is faced with increased budgetary constraints and downsizing requirements which have led to an increased emphasis by military organizations to reduce expenditures. By reducing expenditures and doing more with less the military organizations are required to be more efficient in their daily operations. To increase this efficiency organizations have been researching ways to reduce the amount of paper and toner consumed. USAF organizations not only need to understand the need to become more efficient, but they also need to understand how to determine what will make them more efficient. This paper will first provide the background for why the Digital Printing and Imagery (DPI) initiative is important to USAF organizations. Once the need has been established, the discussion will then steer to what equipment will be most essential to an organization implementing the Digital Printing and Imagery (DPI) initiative. Lastly, the paper will provide organizational tools to determine what they need to do to implement the DPI initiative in their organization. As stated previously, USAF organizations need to become more efficient due to budgetary constraints; however, that is not the only reason. The Paperwork Reduction Act of 1995 mandated the reduced consumption and reliance on paper products for all Federal organizations.

In 1995 Congress passed the Paperwork Reduction Act which modified the previous Paperwork Reduction Act of 1980. The new Act's basic purpose is to minimize

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<sup>1</sup> Kenneth B. Heitkamp, USAF Information Technology Commodity Council Briefing, 26 May 04

<sup>2</sup> F-22 Raptor: FY 2006 Procurement & Events (updated), Posted 29-Sep-2006 02:01, <http://www.defenseindustrydaily.com/2006/09/f22-raptor-fy-2006-procurement-events-updated/index.php>

the paperwork burden in organizations, and to maximize the utility of information created, collected, maintained, used, shared and disseminated by or for the Federal Government. In short, this Act gave Federal Government organizations notice that they needed to reduce the amount of hard copy paperwork they generated as well as initiate further paperwork reducing programs. This Act not only mandated improved business processes, but clearly illustrated the Federal Governments' need to improve their business processes and made them legally bound to reduce the amount of paper the government generates. Since this act, there have been several additional attempts at reducing the amount of paperwork generated by the Federal Government. The second act that has lead to the DPI initiative is the Clinger-Cohen act of 1996.

The Clinger-Cohen Act of 1996 set the basic groundwork for not only reduced paperwork, but overall business process reengineering. Through this act, Congress established the title of Chief Information Officer or CIO for all executive agencies. The Act also established specific guidelines and procedures the CIO must adhere to. Included in these duties is the requirement to develop information technology that will continue to reform the way executive agencies, to include the DoD, do business and improve overall organizational processes. The use of Information Technology advancements is one way the CIOs have been able to optimize the business processes and reduce the overall amount of printed documents produced and thus reducing overall toner ink consumed in an organization.

Within the DoD separate service CIOs were established in order to better optimize the use of Information Technology within each service. The USAF CIO established the Information Technology Commodity Council (ITCC) in order to optimize the use of information technology within the USAF. In fact, the USAF established the ITCC to achieve agile sourcing of IT commodities through innovative strategic solutions developed by multi-skilled professionals who anticipate and deliver war-fighting capabilities. The mission of the ITCC is to Develop IT commodity strategies to shape USAF buying behavior, leverage USAF buying power, reduce Total Cost of Ownership

(TCO), and ensure IT infrastructure supports network-centric operations.<sup>3</sup> One of the key focus areas of the ITCC is the exploitation of the concept referred to as the Digital Printing and Imagery (DPI) initiative.<sup>4</sup> The DPI initiative consists of implementing an USAF-wide commodity strategy for DPI devices.

## **B. SCOPE**

The scope of this strategy consists of reducing the total number of copiers and printers through the increased utilization of multi-function devices (MFDs). Although this strategy does not mandate complete removal of printers, copiers, scanners, and faxes, it does recommend a more efficient use for these devices, their consumables and related services. The objective of this focus area is to move away from the concept of personal or organizational peripheral devices into the new more efficient exploitation of a more networked, shared, environment.<sup>5</sup> One of the results of the DPI initiative is reduction in consumable costs within an organization to include paper and toner. Through the DPI initiative USAF organizations will operate more efficiently by utilizing electronic documents, increase electronic file systems, promote electronic file sharing, and minimize the number of document production / reproduction systems within an organization. Within an organization the use of MFDs will lower the overall toner costs in an organization, and the procurement procedures implemented through the DPI initiative will allow for more efficient and cost effective toner purchases.

In order to accomplish this focus area, the ITCC has established four separate strategies in order to successfully implement the DPI initiative:

- Meet USAF Mission Requirements With a Top-Down Strategy
- Lower USAF TCO for Net-Centric DPI Capabilities
- Get The Right Information to The Right Place at The Right Time

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<sup>3</sup> Kenneth B. Heitkamp, USAF Information Technology Commodity Council Briefing, 26 May 04

<sup>4</sup> John Gillespie, Air Force Information Technology Commodity Council Briefing, 27 Apr 06

<sup>5</sup> John Gillespie, Air Force Information Technology Commodity Council Briefing, 27 Apr 06

- Increase Productivity With New Technology And DPI Process Reengineering
- Educate And Communicate

In order to meet USAF mission requirements with a top-down strategy the USAF plans to both provide equal or better DPI services to USAF users and to realign military resources to support inherently military missions. By doing this the USAF will be able to optimize the use of DPI within organizations; thus, reducing the amount of paper and toner consumed in an organization. In order to lower the total Cost of Ownership for DPI systems the ITCC plans to incorporate a number of separate yet synergistic approaches. They plan to leverage purchasing power, develop supplier relationships, reduce the number of devices to simplify training, installation, maintenance and service, drive down consumable costs and supply inventories, leverage the network to automate and centralize fleet management, and improve DPI data collection capabilities. Each one of these approaches would lower the TCO to some effect, but implementing them together will more effectively reduce the overall TCO for DPI systems. In order to get the right information to the right place at the right time the ITCC plans to ensure DPI products are defined through standard configurations, buying standards are established and the Quarterly Enterprise Buys (QEB) is co-opted. To increase productivity with new technology and DPI process reengineering the ITCC will ensure personnel are trained in the use and care of the new DPI systems.<sup>6</sup> Once personnel are properly trained and understand the capabilities of the DPI systems organizational productivity and efficiency will significantly increase. The result will be reduced costs of consumables to include paper and toner. For more information on the details and organizational guidelines of the ITCC refer to the Naval Postgraduate School (NPS) MBA Professional Report entitled “Defining Success: The USAF Information Technology Commodity Council” published in December 2005.

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<sup>6</sup> Kenneth B. Heitkamp, USAF Information Technology Commodity Council Briefing, 26 May 04



### **C. ITCC AND ELECTRONIC RECORDS MANAGEMENT (ERM)**

The ITCC is the focal point for information technology advancements in the USAF. There is no other area that could utilize the capabilities of the DPI initiative more than the ERM System. The USAF has written the ERM Solution in order to provide guidelines and procedures for the creation, preservation, protection and disposal of electronic records.<sup>7</sup> “Electronic Records Management is a growing concern as rapid technological advances have driven USAF organizations into the Electronic Records Management (ERM) business. While electronic mail (e-mail) revolutionized the flow of communication, it significantly contributed to the need for an ERM solution. The ERM process in this guide provides a method for ensuring electronic records (e-records) are available and protected in order to support business operations, as well as meet statutory requirements to provide appropriate access throughout the lifecycle of the record.”<sup>8</sup> The key area of the ERM Solution that requires the products and solutions of the DPI initiative is the following statement: “Upon implementation of the ERM solution, applicable official records will be stored electronically and duplicate paper copies destroyed. Staging (storage) areas of paper will also be reduced and eventually eliminated.”<sup>9</sup> The ERM Solution is the first step in reducing the organizational expenses attributed to consumables such as paper and toner; thus, creating a paper-less records system within the USAF. This paper-less system will rely on technological advancement in IT that promote the ease and accessibility of electronic documents. There are many high-tech companies that have been introducing tools aimed directly at this problem and, in the commercial world, are revolutionizing the way companies do business. One of the best tools developed is the multi-function device (MFD).

The MFD is a business tool that can copy, scan, fax, e-mail, and electronically file documents all from one device. The capabilities of the MFD are vast, and the benefits

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<sup>7</sup> Emma Hochgesang-Noffsinger, SAF/XCISI, Air Force Electronic Records Management (ERM) Solution, 14, Jul 06, Pg 1

<sup>8</sup> Emma Hochgesang-Noffsinger, SAF/XCISI, Air Force Electronic Records Management (ERM) Solution, 14, Jul 06, Pg 1

<sup>9</sup> Emma Hochgesang-Noffsinger, SAF/XCISI, Air Force Electronic Records Management (ERM) Solution, 14, Jul 06, Pg 1

gained have the potential for substantial savings which could be then used for other operational programs such as the purchase of the F-22. Through use of the MFD USAF organizations will be able to accomplish the following tasks:

- Provide a replacement for copiers and printers in an organization
- Develop electronic file sharing capability
- Reduce the amount of paper used by copiers
- Provide color publishing capability
- Reduce copier footprint
- Provide capability to perform complex collated printing (with stapling)

#### **D. MULTI-FUNCTION DEVICES**

The MFD is capable of taking the place of an organization's current printers and copiers. With this one device the same capability will exist within an organization for document production and reproduction. The advantage of using a MFD in an organization compared to the conventional way is that the MFD is capable of electronic file sharing. Electronic file sharing is provided by connecting the MFD to the network; thus, providing capability to store documents directly in a specific file folder. This capability alone meets the requirements of the ERM Solution. By providing this capability, an organization's electronic file records system will be vastly more efficient and productive. The MFD will also allow organizations with paper file systems to easily transfer these into an electronic records system. Through the creation of the electronic records system the amount of paper consumed in an organization will be greatly reduced while still providing each organization the capability to still produce documents on paper when needed. The MFD also provides the capability to produce color documents as well as collated printing.

Many different companies are providing the MFD capability, and each of these devices provides a means for complying with the ERM Solution. The ITCC DPI Initiative provides the USAF with a means of procuring such devices in order to make all

organizations more efficient. The ITCC DPI Initiative not only provides an efficient procurement process it also provides a system for determining the best MFD system for USAF organizations. The result of the DPI Initiative will be more efficient and effective USAF organizations utilizing the most capable IT systems available. The MFD will not only save the DOD millions of crucial defense dollars, but revolutionize the way the DOD does business on a daily basis. In today's fast paced high ops tempo environment, the MFD serves as a way to ease some of the pressure of our day-to-day jobs and allow us to do what is really important, fighting our Global War on Terrorism and ensuring the continued safety and security of the United States. The MFD will help the DOD do all of that. Aside from allowing DOD to focus on their critical daily mission, the MFD will help DOD exceed the requirements of the Paperwork Reduction Act and the Clinger-Cohen Act, and free up millions of dollars in operational expenses that can be used for more critical defense-related activities. The strategic goals of the MFD are to provide better mission execution via a top down strategy, lower Total Cost of Ownership (TCO) in the hardcopy space, get the right information to the right place at the right time, and to increase productivity.

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## **II. MARKETING DPI**

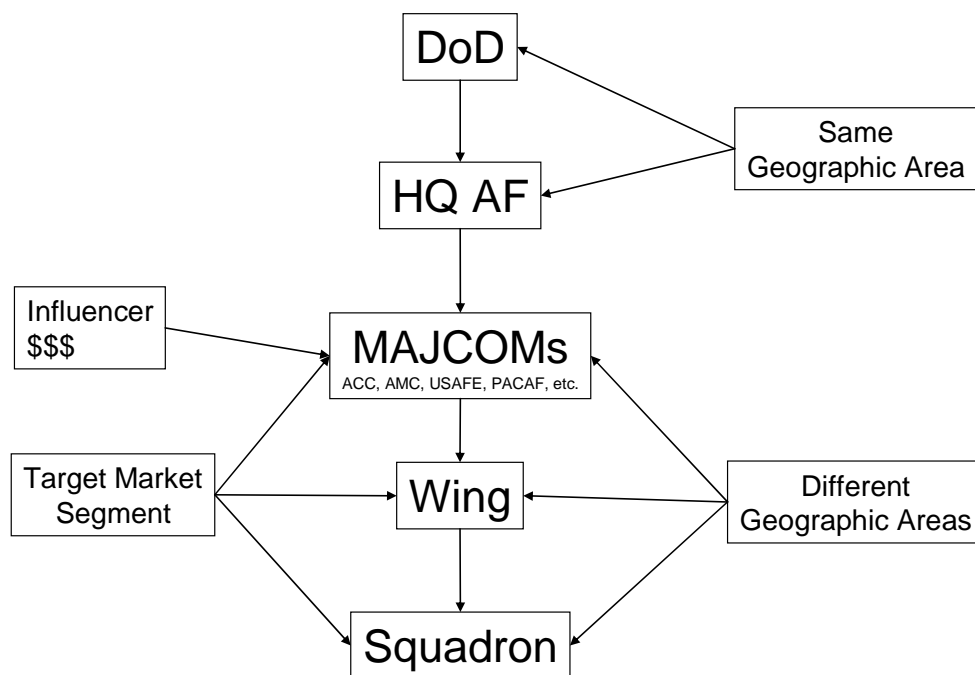
### **A. MARKETING DPI**

The approach to marketing DPI throughout the Air Force lies in a rich combination of document solutions accompanied by the service and knowledge to ensure the program is successful. Depending on the organizational budget, this service may be completely outsourced, or a combination of in-house and contractor service. Each solution will be tailored to the organization. This initiative does not advocate a wholesale replacement of all print and copy devices with multi-function devices. However, it advocates a fully managed DPI program that ensures each organization is getting the best and most cost effective service for their budget. Marketing DPI will take a concerted effort to educate and train all users on how to work and spend more efficiently in the DPI business area. Again, this is more than simply buying new printers or multi-function devices. This is improving the way the Air Force performs its day-to-day missions and includes electronic records management, data and file storage, color vs. black and white printing, and how information flows and is processed in an organization. These concepts present a holistic approach to the DPI area and if implemented in concert will represent significant cost savings and business improvements.

### **B. MARKET AND SEGMENTATION**

The plan for segmenting the DPI space in the AF is to use a top down approach. The Air Force (AF), like other Services in the DOD, is a typical hierarchical organization as shown in Figure 1. The AF consists of 9 Major Commands (MAJCOMs) that have between 6 to 12 bases that fall under them. An average AF base will normally have 15 to 25 squadron level organizations. The problem is overcoming the geographic challenge of reaching each AF base throughout the World. In order to efficiently segment the DPI space, initial focus should be at the MAJCOM and then work to the base and squadron level.

# AF Organization



**Figure 1. Air Force Organization Hierarchy**

The reason that we are using a sequential market segmentation plan is mainly due to the geographic problem of the base-wide segment and the influence that MAJCOMS have on their bases. MAJCOMs are basically an administrative organization with oversight over the missions and bases that fall under them. The plan is to work through the ITCC representative in the A6 office at the MAJCOM and gain their stakeholder support in implementing the DPI strategy solution for their organization and subordinate bases. Once this solution is successfully installed at the MAJCOM level, the bases will be more likely to follow. Like every other DOD organization, money in the AF flows from the top down. The plan to demonstrate to the communications professionals at the MAJCOM level that DPI is a practical and cost effective solution for them, and therefore, their subordinate bases is a sound strategy. Because these professionals have major

influence over the money and strategic plans of their bases, we feel we will have a better rate of success at the base level market.

The base level market consists of many different organizations. However, most AF bases have a base-wide copier contract administered by the Communications Squadron (CS) Commander. One issue the commander will deal with is how to terminate or reduce the size of the base copier contract, as DPI should eliminate or greatly reduce the need for a base copier contract.

### **C. VALUE PROPOSITION**

The introduction of DPI to any Air Force organization will increase productivity, reduce costs, and create a more efficient organization. The capabilities provided from this implementation make it a significant efficiency to any Air Force organization. All Air Force organizations require the production, reproduction, and dissemination of multiple documents throughout the course of a normal day of operations. This document production and reproduction can be more efficiently accomplished providing time savings, thus cost savings, to each Air Force organization utilizing the resource. Additionally, the dissemination processes of a networked document solution allow for documents to be more easily shared from one member of the organization to another. The first aspect of DPI implementation is the ability to reproduce documents in a professional manner. Typically documents are reproduced on a copy machine whose sole purpose is to do such an operation. The majority of copiers in the Air Force inventory are solely capable of black and white reproductions. Additionally, the current copiers utilized in Air Force organizations are not capable of the reproduction of professionally published material.

Another aspect of the DPI capability that will improve efficiency in the organization is the ability to print from any computer connected to the network. The DPI solution requires that all devices be fully network capable. This capability allows for users within the organization or outside of the organization to print to any devices as long as they are connected to the network. One new capability that a fully implemented DPI strategy offers that did not previously exist is a method for all Air Force organizations to

share and store digital documents that originate from either paper copies or from digital format. The ability to share and store digital documents will greatly enhance the efficiency of Air Force organization file processing. All Air Force organizations are required, by law, to maintain electronic file records. Currently the method for creating these files is by either originating the file from a digital document or by scanning the paper copy into a digital format. A fully realized implementation will provide access through the network connection to where the electronic files are stored. These files can be created by scanning the paper documents into an electronic folder for storage and dissemination. This capability will greatly reduce the amount of time required to create and update the electronic file system; thus, creating efficiency in the Air Force organization allowing for time of each member to accomplish other required tasks.

The digital files are not only capable of being sent to file folders for storage on the network, but the new networked capability allows a user to send these documents to e-mail accounts of users on and off the network. These files can originate in an electronic or paper format, and they can be sent to multiple e-mail accounts at the same time. This ability to share documents through email accounts works in concert with the file storage system. In order to ensure all e-mail recipients receive the most up-to-date document the original file is stored in a file folder on the network while all the e-mail recipients receive a pointer (or link) to this document in the e-mail. This advanced technology allows for the originator to update the document at will while the recipients receive a link to the most current file. As the originator updates the file each recipient has access to the most current document at all times.

DPI implementation allows for increased efficiency through document reproduction and production in either paper or digital format. The capability of reproducing, sharing, printing, and faxing documents from one resource creates efficiency in an organization as well as reduces the amount of equipment required in the organization. Even though the reduction in resources required is a big leap in cost saving within an organization, efficiency is created through the active file sharing through networked folders and e-mail accounts. This exponential leap in efficiency is the reason all Air Force organization should invest in DPI.



#### **D. CHANNEL OF DISTRIBUTION**

DPI should be implemented through a centralized contract available through the Air Force's Information Technology acquisition web site, AFWAY. This contract should list a combination of devices and services that are in line with DPI initiatives, such as implementation of Multi-function devices and other fully networked products. Much like the quarterly enterprise buys for computers; the DPI contract should have several competing companies from the print industry. Additionally, as mentioned, this contract should offer a range of services in-line with DPI initiatives. These services should range from a fully outsourced plan to device only and no service, with every combination in between. AFWAY is the standard AF tool for purchasing IT products within the Air Force. The Air Force, through GSA offers a set range of products and services that can be purchased through a centralized location which negates the need for an organization to establish individual contracts.

Depending on the level of service purchased, the issues of delivery, logistics and customer service can be wide-ranging. However, once the product and services are purchased, each organization can establish their own level of service and method of delivery.

Recruiting and incentivizing the various Air Force organizations to this initiative will be done through a vigorous use of the four marketing P's; Product, Place, Price, and Promotion. This strategy is built on a vision of delivering quality business solutions that not only save money but deliver real efficiencies to the daily operations of any organization.

**PRODUCT:** We will offer many different DPI's approved solutions. These solutions will be based on the organizations future state goals which were achieved through the current state assessment. The great thing about DPI is that a business solution can be tailored to each individual organization. This is what makes this product so unique. We can integrate a personalized Customer Solution with each product and each organizational situation. This gives every

organization the flexibility to choose how they will implement this business solution.

**PLACE:** As previously stated, we will make all DPI products and services available through AFWAY, the official Air Force IT product purchase website. By doing this we can also leverage bulk buying and offer users discounts on purchases of devices. Payments can also be spread out over different periods as long as they are within the current Fiscal Year. This also encourages organizations that may not have the full dollar to purchase now the flexibility to get the service and then look for the funding later after users are attached to the service.

**PRICE:** Price is determined through the AFWAY contract, and there is not much negotiating room. However, we can negotiate services and level of services. For instance, for a limited time we can offer on-site initial user training to get people excited about their particular DPI implementation and ensure they understand all of its capabilities. We can offer this service for free with a certain purchase level of products from an organization.

**PROMOTION:** Our promotion will be one of personalized calling on Communications Squadron Commanders, sending out pamphlets and Brochures and posting out commercials on the Air Force Portal web site. Through each of these promotions we seek to gain awareness of our product, educate our target audience about our product and show how it can not only save money, but improve the way the Air Force does business on a daily basis.

In order to successfully promote the DPI initiative to the leaders of Air Force organizations effectively these leaders need to be made aware of their need for the product. To promote the DPI to these decision makers in the organization very little research needs to be accomplished in order to understand their status of document reproduction and production. It is imperative for promotion to discuss the cost to maintain copies, printers and fax machines in an organization.

Another factor to promote the DPI to the Air Force organizations is to make them understand the increased efficiency that will be gained through utilizing such a resource. The mandatory requirement of electronic file systems to be maintained in all organizations allows for an easy promotion of the DPI. The capabilities of the DPI allows for an easier and more complete way of maintaining these electronic files. The ability of the DPI to provide a more efficient means of maintaining these files with fewer man hours required will be a big selling point to Air Force leaders. Air Force organizations are consistently required to “do more with less”, and any increase in efficiency will be a huge benefit for the organization. By analyzing the current process used to create, update and maintain these electronic files the DPI can be easily presented as a cost saving measure in both economic and manpower terms.

Manufacturers have many pamphlets available identifying the many different products and services they offer which are in line with DPI initiatives. By presenting this information to the leaders of the Air Force organizations they will be able to identify the capabilities and series they require. Since they have been made aware of the need for the product they are now given the solution to their problem. The different products have a vast array of capabilities, and they are able to personally analyze which model would best suit the needs of their organization. Once they have decided on what best suits their organization the promotion process is over.

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### **III. ERM**

#### **A. ERM BACKGROUND**

One of the key areas that will benefit from the implementation of DPI is the area of Electronic Records Management (ERM). A recent court case established that electronic records provided public requesters more information than paper records (date/time of e-mail transmission/ receipt, recipients of the documents, and other metadata that accompanies our electronic records). This court ruling imposed a DOD requirement to implement an ERM plan to capture electronic records and maintain them IAW our existing records disposition schedule (RDS). The USAF response to the DOD requirement is to transform the general life cycle management of electronic documents to the Electronic Records Management (ERM) solution. The ERM solution will be used until a Records Management Application (RMA) is developed and implemented.<sup>10</sup>

The most current version of the Air Force ERM solution is version 6.1 dated 14 Jul 06. The Air Force ERM solution implements the DOD Directive 5015.2, Records Management Program, March 6, 2000; DOD Standard 5015.2, Design Criteria Standard for Electronic Records Management Software Applications, June 2002, DOD Directive 5100.3, Support of Headquarters of Combatant and Subordinate Joint Commands, Change 1 March 23, 2000, AFRD 37-1, *Air Force Information Management* (will convert to AFRD 33-3, *Information Management*).<sup>11</sup> The DOD Directives are a result of laws passed in Congress for more efficient management of records within governmental organizations. One of the key laws referenced by DOD Directive 5015.2 is the Paperwork Reduction Act. This was one of the first mandates by Congress to implement an electronic records management system; however, it was not easily implemented or enforced over time.

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<sup>10</sup> Emma Hochgesang-Noffsinger (Air Force Records Officer), "Implementing the Air Force Electronic Records Management (ERM) Solution Using Existing Resources" Briefing, 16 Aug 03

<sup>11</sup> Emma Hochgesang-Noffsinger, SAF/XCISI, Air Force Electronic Records Management (ERM) Solution, 14, Jul 06, Pg 1

## **B. ERM GOAL**

The goal of the Air Force ERM solution is to outline methods for implementing ERM through the use of existing resources. In order to provide methods for implementation Air Force ERM solution will provide standards for preserving, protecting and disposing of official records in/on electronic media and to incorporate those standards into each phase of the electronic record's life cycle.<sup>12</sup>

This ERM solution applies to all Air Force military, civilians, and contractor personnel under contract by the DOD who create records in their area of responsibility, including the Air Force Reserve Command (AFRC) units and its members, civilians and contractors. The ERM solution applies to the Air Force Reserve, Air National Guard and those combatant commands where the Air Force is the executive agent; and to contractors by contract or other legally binding action, wherever an Air Force contract provides for the operation of a system of records or portion of a system of records to accomplish an Air force function. Information in this guide will be incorporated as part of Air Force Instruction 33-364, Records Disposition -- Procedures and Responsibilities and may also result in updates to other Air Force Records Management instructions.<sup>13</sup>

## **C. ERM AND DPI**

So, how does ERM fit in with DPI? As previously described, DPI involves some implementation of Multi-Function Devices. These devices have the capability to e-mail documents, bar code and electronically file documents, and scan and electronically file documents. Having these capabilities are right in line with the tenets of ERM.

In June 2004, the Air Force mandated that every organization establish an electronic filing system in accordance with the ERM solution guidance. This guidance was implemented by the base communications organizations, establishing secure, shared drive spaces dedicated to the official electronic filing systems. These electronic file

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<sup>12</sup> Emma Hochgesang-Noffsinger, SAF/XCISI, Air Force Electronic Records Management (ERM) Solution, 14, Jul 06, Pg 1

<sup>13</sup> Emma Hochgesang-Noffsinger, SAF/XCISI, Air Force Electronic Records Management (ERM) Solution, 14, Jul 06, Pg 1

systems mirrored the hard copy file systems that already existed in every organization. With an approved, official electronic file system in place, organizations can now store official records and documents electronically and not have to maintain a hard copy. This has the potential to dramatically reduce the amount of paper the Air Force produces and at the same time reduce all the peripheral costs of maintaining a hard copy. For instance, these peripheral costs include the paper to print the document, the ink used to print it, the file folder and file cabinet used to store the document, the physical space the document is stored in etc... When all these costs are added up over the entire Air Force, the costs are in millions on a per year basis. By just implementing a robust ERM solution, the majority of these associated costs have the potential to be reduced by 10% to 30%.<sup>14</sup> This is not to say that some of these costs will not be borne by the implementation of ERM. ERM costs include the purchase and maintenance of the servers and backup servers to store the documents as well as the software used for managing and administering the ERM solution. However, many of the costs associated with implementing ERM are quinquennial costs with the average life cycle of a Multi-Function Device being 5 years.

Why ERM? ERM implementation in the case of DPI becomes an enabler and allows for a smooth transition to a more electronic business environment.

Some of the benefits to ERM implementation include:

- Quicker and easier information retrieval
- Reduction of paper record holdings
- Reduction of space required to stage paper records
- Easier transition to an electronic record keeping application
- Compliance with legal requirements

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<sup>14</sup> Kenneth B. Heitkamp, USAF Information Technology Commodity Council Briefing, 26 May 04

#### **D. ERM BENEFITS**

These benefits are only magnified when coupled with the benefits of the DPI implementation. They are mutually beneficial and the potential cost savings associated with ERM implementation build upon the DPI savings. A recent study was conducted that developed the average costs a worker incurs in the normal conduct of their job. Those average costs are as follows:

- Average office/person ...<sup>15</sup>
  - Makes 19 copies of each document
  - Spends \$280 re-creating each lost document
  - Spends \$20 in labor to file each document
  - Loses 1 of 20 (5%) office documents
  - Spends \$120 searching for each miss-filed document
  - Information misfiled = 3-5%
  - Cost per misfile = \$125+
  - Office information increases 20% annually
  - Records/Info systems = 50% of your operating costs
  - Time spent searching for information = 20-30%
  - Ref to filed info within 2 years = 80-90% of the time
  - Files containing duplicate or out-dated info = 50% +
  - Each record retrieval costs \$1.50

DPI will not completely eliminate the above costs, but just implementing some of the DPI recommendations such as a robust ERM plan, and effective use of Multi-



Function Devices will realize significant cost savings per person. Taking the numbers from the above study, and subtracting out cost savings from a more efficient business practice, from an Air Force wide view, yearly savings could reach potentially 10% to 30%..<sup>16</sup> Those savings could be used towards the purchase of an F-22 or a V-22 Osprey.

## **E. ERM TOOLS**

The Air Force recently selected an integrated Enterprise Information Management (EIM) tool suite, a key enabler for rapidly delivering assured, decision-ready information to commanders across the spectrum of military operations. The selected suite of tools will be integrated into the AF Portal and GCSS-AF infrastructure (NIPRNet and SIPRNet), providing a suite of core capabilities to include document and content management, records management, workflow, collaboration and interoperability with AF information management tools (IMT). The EIM Tool Suite will solve multiple ERM issues and provide a methodology for standardization. Metadata will be a key Records Management Application feature of the tool suite to ensure an effective search and retrieval.

Any DPI implementation will need to be compliant with the EIM approach and be fully compatible with the tool suite. As seen in the screen capture below, the electronic records file plan looks like a regular electronic file in Microsoft Explorer. It is easily viewed, set-up and accessed, and most users will be able to use this tool with minimal training. Additionally, the ERM life cycle management mirrors the paper life cycle management with the addition of key features such as desktop search and retrieval functions and easy transfer and disposal. As previously stated, ERM and DPI work synergistically and tools such as the Multi-function device are fully compatible with the ERM plan. For instance, the electronic file plan can be accessed from a multi-function device and documents can be filed or accessed from that location. A specific folder and document can be accessed from a multi-function device, and documents can be accessed,

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<sup>15</sup> Emma Hochgesang-Noffsinger (Air Force Records Officer), "Implementing the Air Force Electronic Records Management (ERM) Solution Using Existing Resources" Briefing, 16 Aug 03

<sup>16</sup> Kenneth B. Heitkamp, USAF Information Technology Commodity Council Briefing, 26 May 04

updated and disseminated right from the device. This gives a user the option of printing, electronically filing, e-mailing, or scanning and filing any official document they need. Having this capability will represent significant savings in workload as well as cost savings. ERM and DPI now give users a choice as to whether or not they really need to make a hard copy record or can keep it electronic.

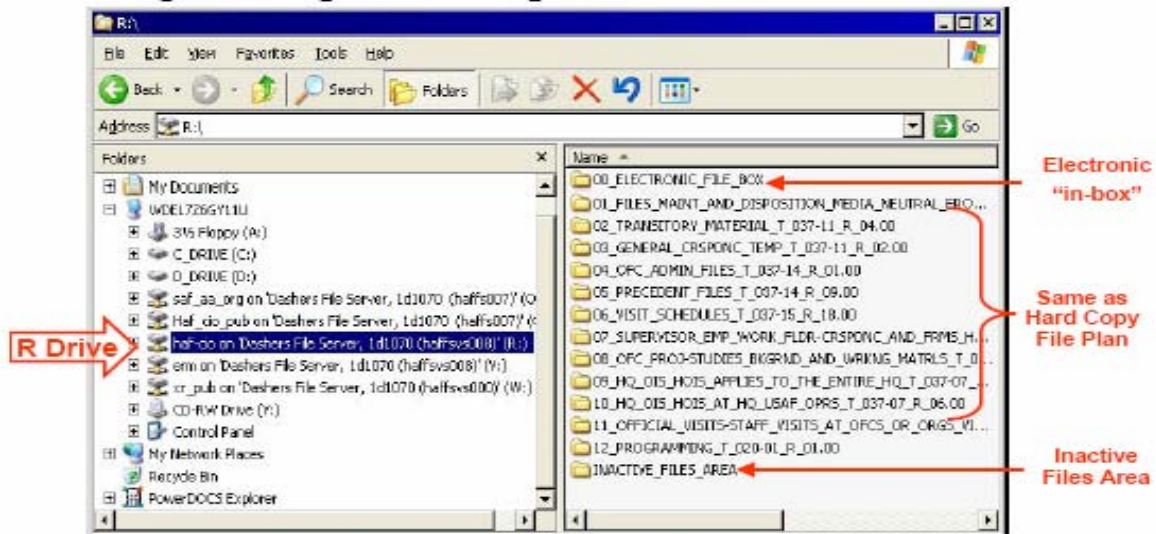
The five steps to implementing an ERM plan are much like the steps involved in performing a quick assessment for DPI. The steps are:

1. Leadership Support
2. Form RM and NCC team
3. Establish base/unit structure
4. Group Assignments
5. Unit level Assignments

Prior to beginning any task related to DPI or ERM, it is critical to gain the support of the senior leadership. By doing this, every organization knows that this is an important task and will be more helpful in implementing the solution. Once leadership support is gained, the records management and Network control center team is formed. This team will be responsible for creating the shell of the electronic file plan and the drive space on the servers or Storage Area Network that the units will populate. The records managers will establish the requirements for what will be posted to the electronic file plans. Once the shell is built, the team will establish the base and unit structure of the file plan which then leads to the group and finally unit level assignments which includes populating the file plans with the actual unit electronic file structure. This five step process, once completed, will lead to an effective and usable electronic file plan which will enable the use of Electronic Records Management. Coupled with a robust DPI implementation and a good business rule set, there are great workload efficiencies and potential cost saving to be gained.

# Shared Drive File Plan

- R Drive is HAF ERM repository
- Logon script will map users to the R Drive



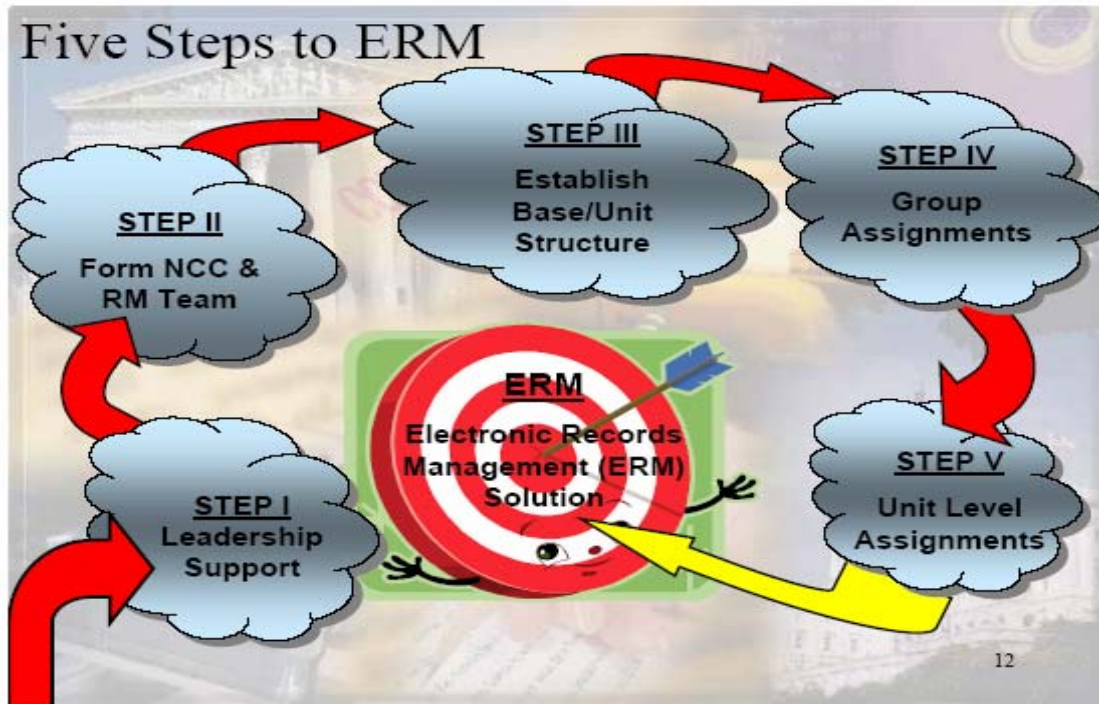
**Figure 2. Shared Network Drive Plan**

(From Ref. "Implementing the Air Force Electronic Records Management (ERM) Solution Using Existing Resources")



**Figure 3. Records Management Life Cycle**

(From Ref. "Implementing the Air Force Electronic Records Management (ERM) Solution Using Existing Resources")



**Figure 4. Five Steps of Electronic Records Management (ERM)**

(From Ref. "Implementing the Air Force Electronic Records Management (ERM) Solution Using Existing Resources")

## **IV. QUICK ASSESSMENT GUIDE<sup>17</sup>**

### **A. DPI QUICK ASSESSMENT CHECKLIST**

Over the past 3 years, USAF's Information Technology Commodity Council (ITCC) has sought to "develop IT commodity strategies and shape Air Force buying and asset management behavior in order to leverage buying power and reduce costs" through the Digital Print and Imaging (DPI) Initiative. DPI's strategic goals are to provide better mission execution via a top down strategy, lower Total Cost of Ownership (TCO) in the hardcopy space, get the right information to the right place at the right time, and to increase productivity.

The strategy for implementing DPI in the Air Force lies in each organization. The overarching strategy is to get control of the DPI expenditures and develop a solid accounting of the metrics associated with DPI, such as number of devices, device to user ratios, monthly and annual expenditures for consumables such as paper and toner. This space has not been highly managed and data is neither centralized nor accessible

This document accompanies the DPI quick assessment checklist and provides details for each step. By accessing the checklist, an organization has reached the point where they are ready to begin the assessment process.

### **B. INITIAL KICK-OFF BRIEF TO SENIOR LEADERSHIP**

This brief will be provided by a group comprised of MAJCOM ITCC representatives and organizational personnel. The brief, will lay out the assessment process introduce the checklist and seek Leadership approval to continue with the assessment process. It is critical to the assessment success to have all senior leadership approval for the process.

A letter should come from the MAJCOM ITCC rep, going to the Squadron CC. The person that should actually be the lead on the assessment is the Plans Flight

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<sup>17</sup> Lexmark USAF Customer Focus Team; Phil Martin, Roger Akers, Tim Wickirs, Brent French; "The 436<sup>th</sup> Airlift Wing, Dover Air Force Base: Distributed Fleet Management Solution", 1 Feb 2006

Commander, SCX. The team membership should be comprised of a Senior NCO communications planner 3C3XX, along with members of his/her section to augment as needed. The Communications Squadron commander should then work it up the chain to the Mission Support Group Commander. Meanwhile simultaneously, the MAJCOM ITCC rep should be staffing a letter from the A6 to be sent to the Wing Commander notifying him/her of the effort. Then the two efforts meet in the middle at the Mission Support Group Commander at about the same time, from bottom up and top down. The SCX flight commander should then immediately set up the initial brief for the senior base leadership (all Group and Squadron CC's). That briefing should be conducted by the MAJCOM ITCC rep and the SCX Flight Commander.

#### **C. IDENTIFY ASSESSMENT TEAM/ TEAM LEADER**

The team leader should be from the Communications Plans Flight, most likely the flight commander. Supporting the flight commander should be a comm. planner, 3C3XX. The comm. planner should be able to coordinate most of the actual scheduling for each of the groups and facilitate getting the Civil Engineering drawings and the financial information from the comptroller squadron.

Augmenting the team should be 3AXXX Information Managers. There should be one assigned per Group. Their job is to facilitate access to all the required areas, and assist in collecting and organizing the data. They will also be responsible for collecting the usage data from printers and copiers.

The comm. Squadron should also augment the team with a computer network professional. This individual will be responsible for providing the data regarding networked devices.

Finally, the team will require liaisons from each of the various groups that can provide tacit knowledge, such as how many people use a certain device, or their current satisfaction level with printing and imagery devices.

#### **D. INITIAL ASSESSMENT TEAM MEETING**

Once the kick-off brief is complete and the team is assembled, the team lead should have an initial assessment meeting. First, the team members will introduce themselves and identify their area of expertise, i.e. comm. planner, information manager etc... so everyone on the team can get acquainted. Also at this meeting the team lead will lay out the roles and responsibilities for each team member and introduce the preliminary assessment schedule. All team members should provide input as to how they will or will not be able to support the schedule and suggest alternate plans. Once all members agree to the schedule and timeline, the Team leader can adjourn the meeting and establish a date and time for the next meeting which should take place at the mid-point of the assessment.

#### **E. ESTABLISH SCHEDULE**

The following schedule is based on the Wing composition at Dover AFB, a C-5 Wing in Air Mobility Command. Depending on the team composition, the assessment does not need to be done one group at a time. In fact it would be beneficial to do multiple groups simultaneously.

##### **1. Wing Headquarters**

This is comprised of the Wing headquarters, and all the Wing staff agencies, such as Public affairs, Safety, Comptroller, Protocol, etc...

##### **2. Operations Group**

This group includes the group staff and each of the squadrons that fall under it. Bear in mind that many of these squadrons occupy more than one location. Typically, an operations group will be comprised of an Operational Support Squadron and two flying squadrons.

### **3. Maintenance Group**

This group includes the group staff and each of the squadrons that fall under it. Bear in mind that many of these squadrons occupy more than one location. Typically, a maintenance group will be comprised of a flight line maintenance squadron, a back shop maintenance squadron, and a support squadron.

### **4. Medical Group**

This group includes the group staff and each of the squadrons that fall under it. Bear in mind that many of these squadrons occupy more than one location. Typically, a Medical group will be comprised of a Medical Support Squadron, Aeromedical Dental Squadron, Medical Operations Squadron.

### **5. Mission Support Group**

This is the largest and most diverse group on a base. It is typically comprised of a group staff and 7 subordinate squadrons, to include, Civil Engineering Squadron, Services Squadron, Security Forces Squadron, Mission Support Squadron, Logistics Readiness Squadron, Aerial Port Squadron, and the Communications Squadron. This group will be spread out all over the base. This portion of the assessment requires the most time due to its size and number of different locations.

## **F. ASSESSMENT TEAM PERFORMS COMPLETE AUDIT**

This is the meat of the assessment. Based on the approved schedule, the various team members will take the time to physically go out to every organization and building. They will perform a physical inventory of every device and document the following information:

1. Count and document location of every DPI device
2. Collect usage data for printers and copiers if available\*
3. Document Make and Model of each device



4. Age of the device or year purchased
5. Is the device networked
6. Make a special note of unique/special purpose devices such as CAD printers
7. Owning Organization
8. What is the exact location of each device
9. Building and room number
10. How many people use each device

\* This information is obtained on some devices by scrolling through the electronic menu of the device and selecting the usage or page count option.

## **G. DETERMINE CURRENT STATE**

Determining the current state is a critical step in the assessment process. Being so important, the team leader must ensure the information they collected from the survey is accurate and complete. This information should then be cross referenced with the information provided by the comm. squadron network personnel from their network scans.

### **1. Comm Squadron Provide Networked Device Data**

The network personnel in the comm. squadron have the capability to scan the entire network and search for peripheral devices such as printers, faxes, scanners, and copiers. This information provides an initial assessment of how many of the total number of devices are networked. This is an important step because in the future state, all devices should be networked.

### **2. Obtain Building Diagrams from Civil Engineering**

The CE squadron team representative should obtain base and individual building maps, both electronic and hard copy. With these maps the team can start mapping out the

current location and type of all the devices. This information should eventually be put into a PowerPoint type of map for easy viewing. Examples of these building maps are attached in Figures 5 and 6 at the end of the chapter.

**3. Ask finance for GPC purchase information for the past year and parse out printer toner, maintenance, and copier cost information if possible**

This step is best performed by the team representative from the comptroller squadron. Information from the prior entire fiscal year should be collected. This will give a complete cost of consumables for one year.

## **H. EVALUATE METRICS**

Once all the physical data has been collected, and the maps have been created which document the location and types of all the devices, many of the team members can be relieved until the future state planning phase. The evaluation of metrics phase can be performed by the team leader and comm. planner and their staff. This phase is marked by turning the various data points into actionable knowledge items. The output of this phase should be the following:

1. Device to user ratio
2. Overall Paper consumption
3. Median Age of the Fleet
4. Number of models
5. Number of Makes
6. Yearly spend on consumables

Figure 7 at the end of the chapter shows some different methods of displaying those metrics for easier understanding and improved decision making.

## **I. PLAN FUTURE STATE**

Once the metrics have been assembled and put into actionable knowledge items, the entire team should reassemble to assist in making recommendations on the future state. Based on the current state metrics, the future state could be placed into several phases of implementation. Some points to consider in planning the future state include, but are not limited to the following:

1. All output devices should be on the network
2. All output devices should be based on laser technology
3. Output technology should be modular in design for optimal flexibility
4. Deploy Multi-Function Peripheral (MFPs) devices at appropriate locations
5. Replace fax devices leveraging MFPs on the IP Network
6. Deploy output separation “mailbox” capabilities on shared devices\*
7. Maximize consumable saver capabilities as default settings
8. All shared print devices should be from the same family of like devices with high yield consumables
9. All shared output devices should accept assignable security Personal Identification Numbers (PINs) per job
10. Deploy technology providing application query and data integration capabilities via standard Open System Protocols
11. Target average device age at 4 years (3 years during phased rollout)

\*All of the OEMs may not have this capability. Confirm will be needed at the start of the proposals process. This section may be removed.

Once the team has agreed to and developed a plan for the future, the team leader should begin to prepare and out brief the senior organization leadership. This brief should include recommendations for the Commander to approve for implementation as a

way ahead. This strategy should include a phase out plan for older machines. A recommendation for purchasing all new devices at once should not be made, but a phased approach that can be easily managed from year to year. The future state should also not only be composed of Multi-function devices, but a mix of MFD's and printers. The future state brief should also be in-line with the MAJCOM ITCC goals and include potential funding statements. Some future state characteristics are as follows:

1. Highly Manageable Environment
2. Device Consolidation / Standardization
3. Continuous Availability
4. Remote Monitoring & Support Capability
5. Automated Device Data Collection
6. Simplified Support and End User Training
7. Statistics Based Performance Reporting
8. Management Visibility to Asset Statistics
9. Application Integration Capabilities
10. Confidential Print Capability
11. Device Firmware Management
12. Newer, Updated Technology
13. Increased Functionality
14. Increased Employee Productivity
15. Movement Towards Decrease in Paper
16. Streamlined Processes
17. Managed Document Retention/Retrieval
18. Increased Vendor Accountability
19. Easy Budget Allocation

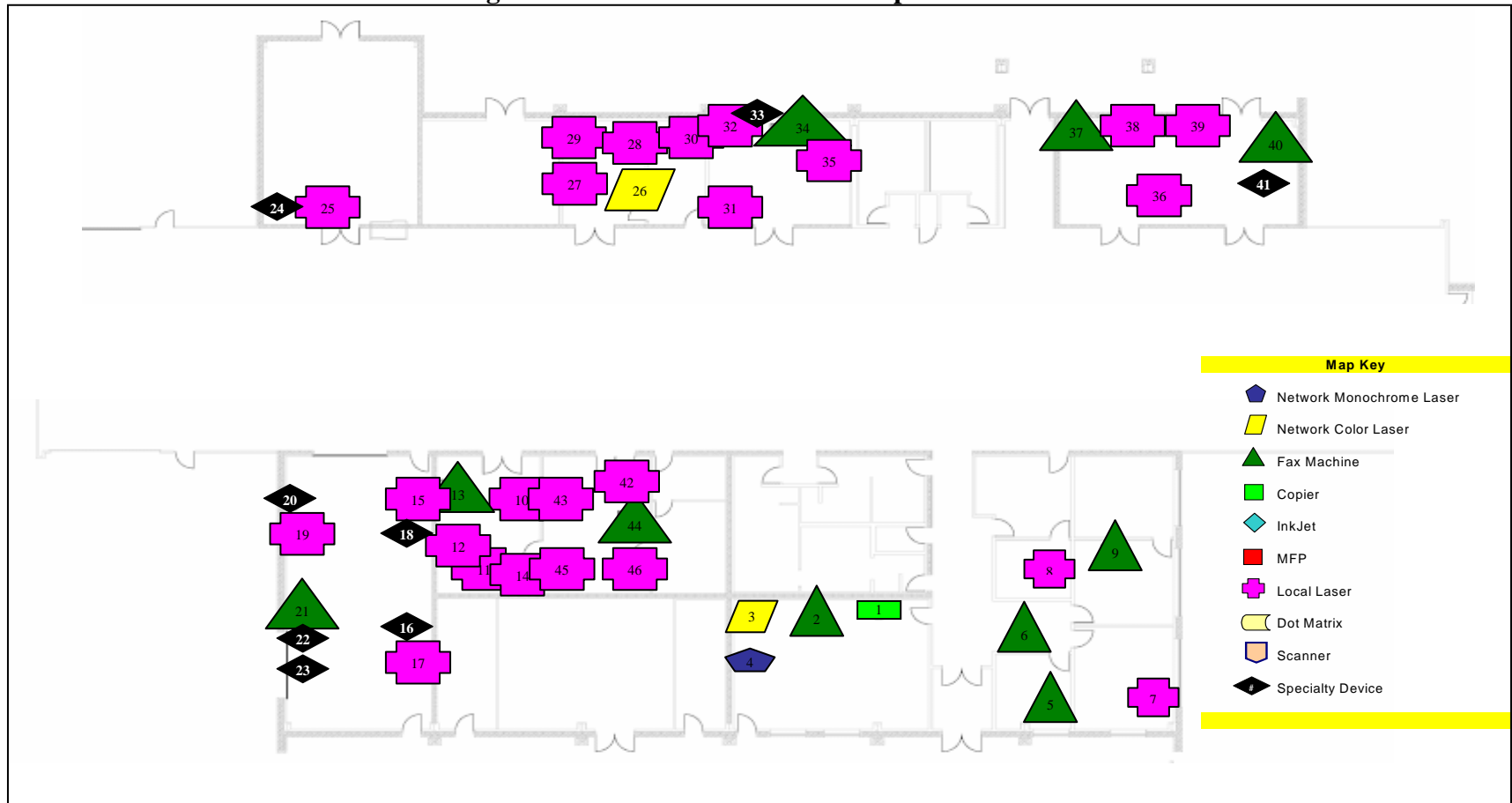
## **J. POST ASSESSMENT**

The post assessment phase is marked by the preparation of a formal staff package including the DPI assessment report. This report, prepared by the team leader will detail the actions of the assessment and include all of the points that are addressed in the post assessment briefing in more detail. This report should be staffed through each of the various organizations and be submitted during or after the post assessment out brief to the senior leadership for final approval. The post assessment out brief to the senior leadership should accomplish the following goals:

1. Formal recognition of all the team members and their accomplishments
2. Presentation of the Assessment Current State metrics
3. Presentation of the current spend total for a fiscal year
4. Some examples of buildings ad their current state
5. Presentation of the proposed phased future state
6. Potential costs associate with the future state
7. Examples of future state implementations and comparisons with current state
8. Formal recommendations for Senior leader approval (included in staff package)

Once this has been accomplished, the assessment team can be dismissed and the team leader should plan for the next phase of implementation depending on the outcome of the post assessment brief and senior leader approvals.

**Figure 5. Current State Example**



(From Ref. "The 436<sup>th</sup> Airlift Wing, Dover Air Force Base: Distributed Fleet Management Solution", 1 Feb 2006, Lexmark Corporation)

Figure 6. Future State Example



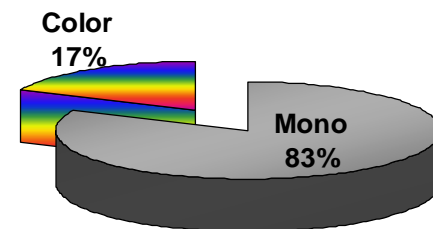
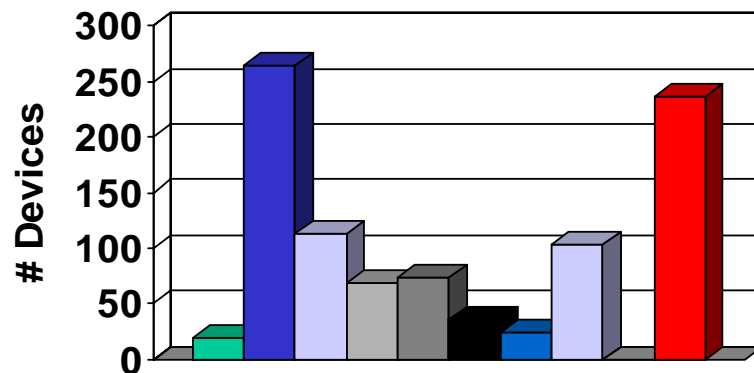
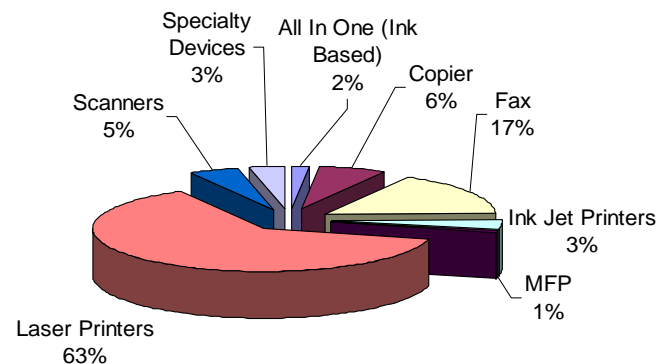
(From Ref. "The 436<sup>th</sup> Airlift Wing, Dover Air Force Base: Distributed Fleet Management Solution", 1 Feb 2006, Lexmark Corporation)

**Figure 7. Example of Displaying Metrics for Clearer Understanding**

### **773 Devices Found**

- 516 Printers (Laser & InkJet)
- 47 Copier/MFP devices
- 149 Fax / All-in-Ones used as Fax
- 37 Scanners
- 24 Specialty devices (thermal, etc)

**Average Device Age is 4 years**



#### **Color Capability**

- 17% color-capable
- 83% monochrome

(From Ref. "The 436<sup>th</sup> Airlift Wing, Dover Air Force Base: Distributed Fleet Management Solution", 1 Feb 2006, Lexmark Corporation)



## V. DPI QUICK ASSESSMENT CHECKLIST<sup>18</sup>

### DPI QUICK ASSESSMENT CHECKLIST

ESTIMATED TIME TO COMPLETE	START DATE	COMPLETION DATE	PRE-ASSESSMENT ACTIONS	NOTES
2 Hours <sup>1</sup>			<b>Initial Kick-off brief to Senior Leadership</b>	The assessment should be performed by the communications squadron, or equivalent IT Organization, with a team made up of Information Managers (3A's) and POC's from each affected organization to serve as liaison's and coordinators for each location. Team Leader should be the Plans and Programs Flight commander from the Communications Squadron. Another key participant should be 2 comm planners from the same flight. Additionally, there should be 2 individuals from the Civil Engineering Plans flight to help facilitate building drawings and mapping out device locations.
1 Day			<b>Identify Assessment Team/ Team Leader</b>	
.5 days			Information Managers/Computer Network Managers	
.5 days			Organizational Members/Liaisons	
4 hours			<b>Initial Assessment Team Meeting</b>	
	START DATE	COMPLETION DATE	ESTABLISH SCHEDULE	NOTES
3 Days			Wing Headquarters	Schedule should reflect a timetable of 2 weeks to gather preassessment data, such as drawings from Civil Engineering, and Network device data from Comm Squadron.  Each team should plan on spending 2 weeks in each Group collecting specific data.
1 Day			Wing Staff	
1 Day			Comptroller Squadron	
4 Days			<b>Operations Group</b>	
2 Days			Operations Support Squadron	
1 Day			Flying Squadron	
1 Day			Flying Squadron	
1 Week			<b>Maintenance Group</b>	
3 Days			Aircraft Maintenance Squadron	
1 Day			Maintenance Support Squadron	
1 Day			Component Maintenance Squadron	
4 Days			<b>Medical Group</b>	
1 Day			Medical Support Squadron	
2 Days			Aeromedical Dental Squadron	
1 Day			Medical Operations Squadron	
3 Weeks			<b>Mission Support Group</b>	
2 Days			Civil Engineering Squadron	
2 Days			Services Squadron	
2 Days			Security Forces Squadron	
2 Days			Mission Support Squadron	
2 Days			Logistics Readiness Squadron	
2 Days			Aerial Port Squadron	
2 Days			Communications Squadron	

<sup>18</sup> Lexmark Corporation Professional Report "The 436<sup>th</sup> Airlift Wing, Dover Air Force Base: Distributed Fleet Management Solution", 1 Feb 2006

	START DATE	COMPLETION DATE	DETERMINE CURRENT STATE	NOTES
1 Week			Comm Squadron provide networked device data	
			How many printers on the network	
			How many scanners on the network	
			How many faxes on the network	
			How many copiers on the network	
			How Many Multi-Function Devices on the Network	
1 Week			Obtain building diagrams from Civil Engineering	
			Map out locations of devices	
6 Weeks			Assessment Team performs complete audit	
			Count and document location of every DFI device	
			Collect usage data for printers and copiers*	
			Document Make and Model of each device	
			Age of the device or year purchased	
1 Week			Ask finance for GPC purchase information for the past year and parse out printer toner, maintenance, and copier cost information if possible	
	START DATE	COMPLETION DATE	EVALUATE METRICS	NOTES
			Device to user ratio	
			Overall Paper consumption	
			Median Age of the Fleet	
			Number of models	
			Number of Makes	
			Yearly spend on consumables	
	START DATE	COMPLETION DATE	PLAN FUTURE STATE	NOTES
			All output devices should be on the network	
			All output devices should be based on laser technology	
			Output technology should be modular in design for optimal flexibility	
			Deploy Multi-Function Peripheral (MFPs) devices at appropriate locations	
			Replace fax devices leveraging MFPs on the IP Network	
			Deploy output separation "mailbox" capabilities on shared devices	
			Maximize consumable saver capabilities as default settings	
			All shared print devices should be from the same family of like devices with high yield consumables	
			All shared output devices should accept assignable security Personal Identification Numbers (PINs) per job	
			Deploy technology providing application query and data integration capabilities via standard Open System Protocols	
			Target average device age at 4 years (3 years during phased rollout)	
	START DATE	COMPLETION DATE	POST ASSESSMENT	NOTES
			Prepare Post Assessment report	
			Prepare Post Assessment Outbrief	
			Team Leader Outbrief's assessment Team	
			Team Outbriefs Senior Leadership	
			Make Recommendations for Way Ahead	

NOTES:

1. Many of the associated tasks can be done simultaneously. Therefore, adding up all the completion times will not give an accurate account of the total time needed to perform the assessment. The assessment should take 2 months from start to completion.

## **VI. CONCLUSION**

### **A. DPI CONCLUSION**

The USAF Information Technology Commodities Council (ITCC) plan for implementation of the Digital Printing and Imagery (DPI) initiative is a comprehensive cost-saving measure that will affect the entire Air Force. This cost-saving measure was implemented in accordance with the Paperwork Reduction Act of 1995 that mandated all Federal Government agencies implement means to reduce the current level of paper documents in the Federal system. Currently Air Force organizations consume over \$100M in paper and related office products each year. This is just shy of the \$130M cost of an F-22 fighter jet. The ITCC DPI initiative's focal point is the entire Air Force and their concentration of effort is to reduce the amount of hard copy documents produced and reduce the amount of print related consumables in Air Force organizations. The DPI initiative alone has the potential of reducing the \$100M price tag by 10% to 30%.

This DPI initiative consists of implementing an Air Force wide commodity strategy for DPI devices. The scope of this strategy consists of multi-function devices (MFDs), printers, copiers, scanners, faxes, consumables, and related services. One of the results of the DPI initiative is reduction in consumable costs within an organization to include paper and toner. Through the implementation of the Air Force Electronic Records Management (ERM) solution and the DPI initiative, Air Force organizations will operate more efficiently by utilizing electronic documents, increase electronic file systems, promote electronic file sharing, and minimize the number of document production / reproduction systems within and organization. The use of MFDs will allow organizations to lower such related costs in consumables and promote a more efficient process for purchase of supplies for the MFDs. The ITCC has developed five separate strategies in order to successfully implement the DPI initiative. First the ITCC plans to meet USAF mission requirements with a top-down strategy, Second, the ITCC plans to lower the USAF Total Cost of Ownership (TCO) for Net-Centric DPI capabilities, Third, the ITCC plans to get the right information to the right place at the right time. Fourth, the ITCC plans to increase productivity with new technology and DPI process reengineering.

Lastly, the ITCC strategy contains plans for the education and communication in order to effectively implement the DPI initiative.

In order for Air Force organizations to consume less paper products the Air Force has implemented the Electronic Records Management (ERM) solution, and the DPI initiative provides one way the ITCC can implement the ERM solution successfully. The Air Force ERM solution provides guidelines and procedures for the creation, preservation, protection, and disposal of electronic records. The ERM process in this guide provides a method for ensuring electronic records are available and protected in order to support business operations, as well as meet statutory requirements to provide appropriate access throughout the lifecycle of the record. The ERM solution is the first step in reducing the organizational expenses attributed to consumables such as paper and toner; thus, creating a paperless records system within the Air Force. One of the best tools to implement such a paperless system is the multi-function device (MFD).

The MFD is capable of copying, scanning, faxing, e-mailing, and electronically filing documents all from one device. Air Force organizations will be able to accomplish the following tasks through the use of MFDs: provide a replacement for copiers and printers in an organization, develop electronic file sharing capability, reduce the amount of paper used by copiers, provide color publishing capability, reduce copier footprint, and provide capability to perform complex collated printing. The MFD is capable of taking the place of an organization's current printers and copiers. The additional capability of the MFD over the current copier and printer in use is the utilization of electronic file sharing capability. This capability meets the requirements stated in the ERM solution.

The DPI initiatives aims are to increase efficiency in the way the Air Force performs its day-to-day mission as well as realizing significant cost savings through those efficiencies. Those cost saving could then be applied to much needed operational programs such as the F-22. Through the synergistic effects of the an effective ERM solution, a quick assessment geared at identifying those efficiencies and potential savings to smart implementation of the DPI objectives, the Air Force will continue to lead the Federal Government in implementing programs geared towards paperwork reduction, environmentally sound, and money saving. The Digital Printing and Imagery initiative is

a smarter way to do business and successfully help the Air Force meet all of its mission objectives.

## **B. LIMITATIONS AND AREAS OF CONCERNS**

Any implementation of Information Technology does not come without associated risk and this DPI implementation is no different. There are risks involved with this program but the key is to mitigate and control those risks as best as possible. The first step to a good risk management plan is to identify the risks involved. Network security is the biggest risk involved in this implementation. With the introduction of Multi-Function Devices on the network, the concern immediately goes to the security of the device and the security of the network it will reside on. Careful attention needs to be paid to networking these devices. For instance, if the fax function is enabled, there could be a potential vulnerability with respect to the phone line going into that machine. If the phone line is not secured, a potential adversary could access the computer network through the open telephone/fax line on the device. Because of this it is recommended to limit the number of fax capable devices and closely manage those.

Another potential risk is associated with bandwidth and network availability. Having every multi-function device, printer, copier, and scanner on the network could represent a significant increase in overall network traffic. This situation could manifest itself in slower response times to network requests, or devices becoming backed up due to this increased traffic. Some remedies to this situation include upgrading Network Management tools to incorporate the new devices and manage the traffic flows for each device. Additionally, if devices are backed up with jobs, network management tools could also provide automatic routing services to another device that is not busy and can process the job in a timelier manner.

Other potential risks to the DPI implementation related to security are in the multi-function devices themselves. A disgruntled employee could use one of the devices to launch an internal network attack or a denial of service attack. To mitigate this risk, network professionals need to maintain their vigilance over the network through the

various monitoring tools as well as a robust training program geared at security, prevention and information awareness.

DPI implementation in any Air Force organization will consist of many changes subject to resistance and skepticism. Many Air Force organizations have become comfortable with the current document file process. The paper document trail is the way all files have been processed in the past, and this is how most would want to continue in the future if allowed to remain to their own ways. This antiquated method of file management requires many extra man-hours for maintenance and duplication if needed elsewhere. Through the DPI initiative file sharing and file management systems will require less hours for maintenance and file sharing is made a much simpler concept. It is the responsibility of organization commanders to ensure they are utilizing the right resources for the right job at the right time. Through DPI implementation less time is spent on file management systems so that personnel can be utilized for more important missions.

One other area of concern for implementation of DPI is that the initial implementation of DPI will require a considerable amount of time and personnel to set in place. There will be a necessary training period of key personnel initially then the entire organization will have to be trained. Once the organization is trained there will be some growing pains while everyone gets used to the new process of file management and the use of DPI. Even though the initial buy-in by squadron personnel will be considerable, the resulting changes in file management and file sharing will be much more beneficial for the organization as a whole.

## **C. FUTURE RESEARCH**

The DPI initiative set forth by the ITCC is a considerable leap in reliance on information technology in Air Force organizations. The use of information technology in Air Force organizations leads to a new myriad of issues associated with it such as security and accessibility. The DPI initiative heavily relies on the use of computer networks for file storage and file sharing. The access to the network and the security of the files are two areas that will be of great concern to any commander. That is why more

research must be done to further exploit the security and access concerns associated with the implementation of DPI. In addition to the security and access privileges further research should be conducted to determine the best way to establish digital file storage for an Air Force organization. Each organization will need at least one alternate location for file backup in case of network failure at the local site. Additionally, this research should include the accessibility of not only file backups but the availability of program required for accessing these files.

As this program is still in its infancy, a contract still needs to be put into place for purchasing DPI devices and service. This contract, as previously stated should have a core number of service and device providers with a standard set of products that meet DPI recommendations and customer requirements.

With the implementation and eventual maturing of the DPI program, it will be increasingly important to continue to track the progress of the program. This includes the establishment of performance metrics that will measure cost savings, time savings, and any potential efficiencies gained. These measures of performance can then be applied to the next spiral development of the program.

Finally, regarding the next spiral implementation of DPI, a procedure for conducting follow-up assessments needs to be done. On an annual to semi-annual basis, organizations will need to re-accomplish their quick assessments to further identify efficiencies or improvements upon their current implementation. These follow-up assessments should also consist of LEAN type studies where they can reduce waste, cut steps or eliminate functions in order to improve processes. For instance, if an organization has a procedure for printing and filing records, they can not only improve the process through implementation of a multi-function device, but may see a further efficiency in having that record go from its origin directly to an electronic file without ever passing through that intermediate office. Any process should be subject to further study and further improvement as situations and are constantly changing.

DPI is a rich environment and provides ample opportunities for process improvement, as well as cost and time savings. Each of these areas for further research

and study are geared towards those ends. Initial implementation of DPI is only the first step to moving towards a more efficient, paperless way of doing business without compromising at all on capability or resources.



## **LIST OF REFERENCES**

1. F-22 Raptor: FY 2006 Procurement & Events (updated), Posted 29-Sep-2006 02:01, <http://www.defenseindustrydaily.com/2006/09/f22-raptor-fy-2006-procurement-events-updated/index.php>
2. Gillespie, John, Air Force Information Technology Commodity Council Briefing, 27 Apr 06
3. Heitkamp, Kenneth B., USAF Information Technology Commodity Council Briefing, 26 May 04
4. Hochgesang-Noffsinger, Emma (Air Force Records Officer), "Implementing the Air Force Electronic Records Management (ERM) Solution Using Existing Resources" Briefing, 16 Aug 03
5. Hochgesang-Noffsinger, Emma, SAF/XCISI, Air Force Electronic Records Management (ERM) Solution, 14, Jul 06, Pg 1
6. Lexmark USAF Customer Focus Team, Martin, Phil; Akers, Roger; Wickirs, Tim; French, Brent, "The 436th Airlift Wing, Dover Air Force Base: Distributed Fleet Management Solution", 1 Feb 06

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